#3

SEQUENCE LISTING

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Budziszewski, Gregory J.
Potter, Sharon L.
Wegrich, Lynette M.

<120> Herbicide Target Genes and Methods

<130> PB/5-30780DIV

<140> 10/047,412
<141> 2002/01/14

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<170> PatentIn Ver. 2.1

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aag aag aag att aaa gat gtt gtt ctt aag gct gag atg ttt gca ccg   96
Lys Lys Lys Ile Lys Asp Val Val Leu Lys Ala Glu Met Phe Ala Pro
             20                  25                  30

gat gct ctt gag ctt gaa gaa gag cag tgg ata aag caa gaa gaa aca   144
Asp Ala Leu Glu Leu Glu Glu Glu Gln Trp Ile Lys Gln Glu Glu Thr
         35                  40                  45

atg cgt tac ttt gat tta tgg gat gat ccc gct aaa tct gat gag att   192
Met Arg Tyr Phe Asp Leu Trp Asp Asp Pro Ala Lys Ser Asp Glu Ile
     50                  55                  60

ctt ctc aaa tta gct gat cga gct aaa gca gtc gat tcc ctc aaa gac   240
Leu Leu Lys Leu Ala Asp Arg Ala Lys Ala Val Asp Ser Leu Lys Asp
 65                  70                  75                  80

ctc aaa tac aag gct gaa gaa gct aag ctg atc ata caa ttg ggt gag   288
Leu Lys Tyr Lys Ala Glu Glu Ala Lys Leu Ile Ile Gln Leu Gly Glu
                 85                  90                  95

atg gat gct ata gat tac agt ctc ttt gag caa gcc tat gat tca tca   336
Met Asp Ala Ile Asp Tyr Ser Leu Phe Glu Gln Ala Tyr Asp Ser Ser
            100                 105                 110

ctc gat gta agt aga tcg ttg cat cac tat gag atg tct aag ctt ctt   384
Leu Asp Val Ser Arg Ser Leu His His Tyr Glu Met Ser Lys Leu Leu
        115                 120                 125

agg gat caa tat gac gct gaa ggc gct tgt atg att atc aaa tct gga   432
Arg Asp Gln Tyr Asp Ala Glu Gly Ala Cys Met Ile Ile Lys Ser Gly
    130                 135                 140
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tct cca ggc gca aaa tct cag ata tgg aca gag caa gtt gta agt atg   480
Ser Pro Gly Ala Lys Ser Gln Ile Trp Thr Glu Gln Val Val Ser Met
145                 150                 155                 160

tat atc aaa tgg gca gaa agg cta ggc caa aac gcg cgg gtg gct gag   528
Tyr Ile Lys Trp Ala Glu Arg Leu Gly Gln Asn Ala Arg Val Ala Glu
                165                 170                 175

aaa tgt agt tta ttg agt aat aaa agt ggc gta agt tca gcc acg ata   576
Lys Cys Ser Leu Leu Ser Asn Lys Ser Gly Val Ser Ser Ala Thr Ile
            180                 185                 190

gag ttt gaa ttc gag ttt gct tat ggt tat ctc tta ggt gag cga ggt   624
Glu Phe Glu Phe Glu Phe Ala Tyr Gly Tyr Leu Leu Gly Glu Arg Gly
        195                 200                 205

gtg cac cgc ctt atc ata agt tcc act tct aat gag gaa tgt tca gcg   672
Val His Arg Leu Ile Ile Ser Ser Thr Ser Asn Glu Glu Cys Ser Ala
    210                 215                 220

act gtt gat atc ata cca cta ttc ttg aga gca tct cct gat ttt gaa   720
Thr Val Asp Ile Ile Pro Leu Phe Leu Arg Ala Ser Pro Asp Phe Glu
225                 230                 235                 240

gta aag gaa ggt gat ttg att gta tcg tat cct gca aaa gag gat cac   768
Val Lys Glu Gly Asp Leu Ile Val Ser Tyr Pro Ala Lys Glu Asp His
                245                 250                 255

aaa ata gct gag aat atg gtt tgt atc cac cat att ccg agt gga gta   816
Lys Ile Ala Glu Asn Met Val Cys Ile His His Ile Pro Ser Gly Val
            260                 265                 270

aca cta caa tct tca gga gaa aga aac cgg ttt gca aac agg atc aaa   864
Thr Leu Gln Ser Ser Gly Glu Arg Asn Arg Phe Ala Asn Arg Ile Lys
        275                 280                 285

gct cta aac cgg ttg aag gcg aag cta ctt gtg ata gca aaa gag caa   912
Ala Leu Asn Arg Leu Lys Ala Lys Leu Leu Val Ile Ala Lys Glu Gln
    290                 295                 300

aag gtt tcg gat gta aat aaa atc gac agc aag aac att ttg gaa ccg   960
Lys Val Ser Asp Val Asn Lys Ile Asp Ser Lys Asn Ile Leu Glu Pro
305                 310                 315                 320

cgg gaa gaa acc agg agt tat gtc tct aag ggt cac aag atg gtg gtt  1008
Arg Glu Glu Thr Arg Ser Tyr Val Ser Lys Gly His Lys Met Val Val
                325                 330                 335

gat aga aaa acc ggt tta gag att ctg gac ctg aaa tcg gtc ttg gat  1056
Asp Arg Lys Thr Gly Leu Glu Ile Leu Asp Leu Lys Ser Val Leu Asp
            340                 345                 350

gga aac att gga cca ctc ctt gga gct cat att agc atg aga aga tca  1104
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Asp Ala Leu Glu Leu Glu Glu Glu Gln Trp Ile Lys Gln Glu Glu Thr
        35                  40                  45
Met Arg Tyr Phe Asp Leu Trp Asp Asp Pro Ala Lys Ser Asp Glu Ile
    50                  55                  60
Leu Leu Lys Leu Ala Asp Arg Ala Lys Ala Val Asp Ser Leu Lys Asp
65                  70                  75                  80
Leu Lys Tyr Lys Ala Glu Glu Ala Lys Leu Ile Ile Gln Leu Gly Glu
                85                  90                  95
Met Asp Ala Ile Asp Tyr Ser Leu Phe Glu Gln Ala Tyr Asp Ser Ser
            100                 105                 110
Leu Asp Val Ser Arg Ser Leu His His Tyr Glu Met Ser Lys Leu Leu
        115                 120                 125
Arg Asp Gln Tyr Asp Ala Glu Gly Ala Cys Met Ile Ile Lys Ser Gly
    130                 135                 140
Ser Pro Gly Ala Lys Ser Gln Ile Trp Thr Glu Gln Val Val Ser Met
145                 150                 155                 160
Tyr Ile Lys Trp Ala Glu Arg Leu Gly Gln Asn Ala Arg Val Ala Glu
                165                 170                 175
Lys Cys Ser Leu Leu Ser Asn Lys Ser Gly Val Ser Ser Ala Thr Ile
            180                 185                 190
Glu Phe Glu Phe Glu Phe Ala Tyr Gly Tyr Leu Leu Gly Glu Arg Gly
        195                 200                 205
Val His Arg Leu Ile Ile Ser Ser Thr Ser Asn Glu Glu Cys Ser Ala
    210                 215                 220
Thr Val Asp Ile Ile Pro Leu Phe Leu Arg Ala Ser Pro Asp Phe Glu
225                 230                 235                 240
Val Lys Glu Gly Asp Leu Ile Val Ser Tyr Pro Ala Lys Glu Asp His
                245                 250                 255
Lys Ile Ala Glu Asn Met Val Cys Ile His His Ile Pro Ser Gly Val
            260                 265                 270
Thr Leu Gln Ser Ser Gly Glu Arg Asn Arg Phe Ala Asn Arg Ile Lys
        275                 280                 285
Ala Leu Asn Arg Leu Lys Ala Lys Leu Leu Val Ile Ala Lys Glu Gln
    290                 295                 300
Lys Val Ser Asp Val Asn Lys Ile Asp Ser Lys Asn Ile Leu Glu Pro
305                 310                 315                 320
Arg Glu Glu Thr Arg Ser Tyr Val Ser Lys Gly His Lys Met Val Val
                325                 330                 335
Asp Arg Lys Thr Gly Leu Glu Ile Leu Asp Leu Lys Ser Val Leu Asp
            340                 345                 350
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        355                 360                 365
Ile Asp Ala Ile
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  1               5                  10                  15

gac aat gaa gca gaa ttg gac gag aat gat ggt gat gtt gga aag gaa   96
Asp Asn Glu Ala Glu Leu Asp Glu Asn Asp Gly Asp Val Gly Lys Glu
             20                  25                  30

gaa gaa gat gtt gat atg gat atg gct gat tta gag aca ctt aac tat  144
Glu Glu Asp Val Asp Met Asp Met Ala Asp Leu Glu Thr Leu Asn Tyr
         35                  40                  45

gat gat ctc gat aat gtt tct aag ctg cag aag agt cag aga tat gct  192
Asp Asp Leu Asp Asn Val Ser Lys Leu Gln Lys Ser Gln Arg Tyr Ala
     50                  55                  60

gat att atg cat aaa gta gag gag gct ctt ggg aaa gat tct gat gga  240
Asp Ile Met His Lys Val Glu Glu Ala Leu Gly Lys Asp Ser Asp Gly
 65                  70                  75                  80

gct gag aaa gga act gtc ttg gaa gat gat cct gag tat aag ctt att  288
Ala Glu Lys Gly Thr Val Leu Glu Asp Asp Pro Glu Tyr Lys Leu Ile
                 85                  90                  95

gtg gat tgt aat cag ctt tcg gtc gat att gag aat gaa atc gtt att  336
Val Asp Cys Asn Gln Leu Ser Val Asp Ile Glu Asn Glu Ile Val Ile
            100                 105                 110

gtc cac aac ttt atc aaa gac aag tac aag ctt aag ttt caa gag ctt  384
Val His Asn Phe Ile Lys Asp Lys Tyr Lys Leu Lys Phe Gln Glu Leu
        115                 120                 125

gag tcg ttg gtt cat cac cct att gac tat gca tgt gtt gtg aag aag  432
Glu Ser Leu Val His His Pro Ile Asp Tyr Ala Cys Val Val Lys Lys
    130                 135                 140

att ggg aat gag acg gat ttg gct ctt gtt gat ctc gct gac ctt ctt  480
Ile Gly Asn Glu Thr Asp Leu Ala Leu Val Asp Leu Ala Asp Leu Leu
145                 150                 155                 160

cct tca gct att atc atg gtt gtt tca gtt act gct tta act acg aaa  528
Pro Ser Ala Ile Ile Met Val Val Ser Val Thr Ala Leu Thr Thr Lys
                165                 170                 175

ggg agt gca ctg cca gag gat gtt ttg caa aag gtg tta gag gct tgt  576
Gly Ser Ala Leu Pro Glu Asp Val Leu Gln Lys Val Leu Glu Ala Cys
            180                 185                 190

gat cgg gct tta gat ctt gat tcc gca agg aag aag gtc ctt gag ttt  624
Asp Arg Ala Leu Asp Leu Asp Ser Ala Arg Lys Lys Val Leu Glu Phe
        195                 200                 205

gtt gaa agt aag atg gga tct att gca cct aat ctt tct gct att gtt  672
Val Glu Ser Lys Met Gly Ser Ile Ala Pro Asn Leu Ser Ala Ile Val
    210                 215                 220

ggg agt gct gtt gca gcc aaa ctc atg ggg act gct gga ggt ttg tca  720
Gly Ser Ala Val Ala Ala Lys Leu Met Gly Thr Ala Gly Gly Leu Ser
225                 230                 235                 240

gca ctt gct aaa atg cct gcg tgt aat gtt caa gtt ctt ggc cac aag  768
Ala Leu Ala Lys Met Pro Ala Cys Asn Val Gln Val Leu Gly His Lys
                245                 250                 255
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agg aag aac ctt gct ggg ttt tct tct gca acg tct cag tcc cgt gtg   816
Arg Lys Asn Leu Ala Gly Phe Ser Ser Ala Thr Ser Gln Ser Arg Val
            260                 265                 270

ggt tat ctg gag cag aca gag att tac caa agc acg cct cct gga ctt   864
Gly Tyr Leu Glu Gln Thr Glu Ile Tyr Gln Ser Thr Pro Pro Gly Leu
        275                 280                 285

cag gct cgc gct ggc agg ctc gtg gct gca aaa tca act ttg gca gca   912
Gln Ala Arg Ala Gly Arg Leu Val Ala Ala Lys Ser Thr Leu Ala Ala
    290                 295                 300

aga gtt gat gct act aga ggg gat ccg tta ggg ata agt gga aaa gct   960
Arg Val Asp Ala Thr Arg Gly Asp Pro Leu Gly Ile Ser Gly Lys Ala
305                 310                 315                 320

ttc agg gag gag atc cgt aag aag att gag aaa tgg caa gaa cct cct  1008
Phe Arg Glu Glu Ile Arg Lys Lys Ile Glu Lys Trp Gln Glu Pro Pro
                325                 330                 335

cct gca aga cag cct aag cca ctt cct gtt cct gat tct gaa ccg aag  1056
Pro Ala Arg Gln Pro Lys Pro Leu Pro Val Pro Asp Ser Glu Pro Lys
            340                 345                 350

aaa aga agg ggt ggt cgc cgt cta aga aaa atg aaa gaa agg tat caa  1104
Lys Arg Arg Gly Gly Arg Arg Leu Arg Lys Met Lys Glu Arg Tyr Gln
        355                 360                 365

gta aca gat atg agg aag ctg gcc aac aga atg gcg ttt ggt aca cct  1152
Val Thr Asp Met Arg Lys Leu Ala Asn Arg Met Ala Phe Gly Thr Pro
    370                 375                 380

gaa gag agc tcc ctc ggt gat gga cta gga gaa ggt tat gga atg ctt  1200
Glu Glu Ser Ser Leu Gly Asp Gly Leu Gly Glu Gly Tyr Gly Met Leu
385                 390                 395                 400

ggc cag gca gga agc aac agg ctg cga gta tcc agt gtt ccg agc aag  1248
Gly Gln Ala Gly Ser Asn Arg Leu Arg Val Ser Ser Val Pro Ser Lys
                405                 410                 415

ctt aag att aat gct aag gtc gcc aaa aag ctt aaa gaa agg cag tat  1296
Leu Lys Ile Asn Ala Lys Val Ala Lys Lys Leu Lys Glu Arg Gln Tyr
            420                 425                 430

gcg ggt ggt gcg act acc tct ggt ttg aca tcg agc ctg gct ttc act  1344
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        435                 440                 445

cct gtg cag gga ata gag ttg tgc aat cct cag cag gct tta gga tta  1392
Pro Val Gln Gly Ile Glu Leu Cys Asn Pro Gln Gln Ala Leu Gly Leu
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gga agt ggg act caa agc act tac ttc tca gag tca gga acc ttc tcg  1440
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Glu Glu Asp Val Asp Met Asp Met Ala Asp Leu Glu Thr Leu Asn Tyr
        35                  40                  45
Asp Asp Leu Asp Asn Val Ser Lys Leu Gln Lys Ser Gln Arg Tyr Ala
    50                  55                  60
Asp Ile Met His Lys Val Glu Glu Ala Leu Gly Lys Asp Ser Asp Gly
65                  70                  75                  80
Ala Glu Lys Gly Thr Val Leu Glu Asp Asp Pro Glu Tyr Lys Leu Ile
                85                  90                  95
Val Asp Cys Asn Gln Leu Ser Val Asp Ile Glu Asn Glu Ile Val Ile
            100                 105                 110
Val His Asn Phe Ile Lys Asp Lys Tyr Lys Leu Lys Phe Gln Glu Leu
        115                 120                 125
Glu Ser Leu Val His His Pro Ile Asp Tyr Ala Cys Val Val Lys Lys
    130                 135                 140
Ile Gly Asn Glu Thr Asp Leu Ala Leu Val Asp Leu Ala Asp Leu Leu
145                 150                 155                 160
Pro Ser Ala Ile Ile Met Val Val Ser Val Thr Ala Leu Thr Thr Lys
                165                 170                 175
Gly Ser Ala Leu Pro Glu Asp Val Leu Gln Lys Val Leu Glu Ala Cys
            180                 185                 190
Asp Arg Ala Leu Asp Leu Asp Ser Ala Arg Lys Lys Val Leu Glu Phe
        195                 200                 205
Val Glu Ser Lys Met Gly Ser Ile Ala Pro Asn Leu Ser Ala Ile Val
    210                 215                 220
Gly Ser Ala Val Ala Ala Lys Leu Met Gly Thr Ala Gly Gly Leu Ser
225                 230                 235                 240
Ala Leu Ala Lys Met Pro Ala Cys Asn Val Gln Val Leu Gly His Lys
                245                 250                 255
Arg Lys Asn Leu Ala Gly Phe Ser Ser Ala Thr Ser Gln Ser Arg Val
            260                 265                 270
Gly Tyr Leu Glu Gln Thr Glu Ile Tyr Gln Ser Thr Pro Pro Gly Leu
        275                 280                 285
Gln Ala Arg Ala Gly Arg Leu Val Ala Ala Lys Ser Thr Leu Ala Ala
    290                 295                 300
Arg Val Asp Ala Thr Arg Gly Asp Pro Leu Gly Ile Ser Gly Lys Ala
305                 310                 315                 320
Phe Arg Glu Glu Ile Arg Lys Lys Ile Glu Lys Trp Gln Glu Pro Pro
                325                 330                 335
Pro Ala Arg Gln Pro Lys Pro Leu Pro Val Pro Asp Ser Glu Pro Lys
            340                 345                 350
Lys Arg Arg Gly Gly Arg Arg Leu Arg Lys Met Lys Glu Arg Tyr Gln
        355                 360                 365
Val Thr Asp Met Arg Lys Leu Ala Asn Arg Met Ala Phe Gly Thr Pro
    370                 375                 380
Glu Glu Ser Ser Leu Gly Asp Gly Leu Gly Glu Gly Tyr Gly Met Leu
385                 390                 395                 400
Gly Gln Ala Gly Ser Asn Arg Leu Arg Val Ser Ser Val Pro Ser Lys
                405                 410                 415
Leu Lys Ile Asn Ala Lys Val Ala Lys Lys Leu Lys Glu Arg Gln Tyr
            420                 425                 430
Ala Gly Gly Ala Thr Thr Ser Gly Leu Thr Ser Ser Leu Ala Phe Thr
        435                 440                 445
Pro Val Gln Gly Ile Glu Leu Cys Asn Pro Gln Gln Ala Leu Gly Leu
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tta att gga tgc aat ttc act tcc tcg ctg aaa aac cct act ggg ttt   96
Leu Ile Gly Cys Asn Phe Thr Ser Ser Leu Lys Asn Pro Thr Gly Phe
            20                  25                  30

tct cgt cgg act cct aat att gtc ctc cgg tgt tcc aaa ata tct gcc   144
Ser Arg Arg Thr Pro Asn Ile Val Leu Arg Cys Ser Lys Ile Ser Ala
        35                  40                  45

tct gct caa tct caa tct ccc tct tcg cgt ccg gag aac act gga gaa   192
Ser Ala Gln Ser Gln Ser Pro Ser Ser Arg Pro Glu Asn Thr Gly Glu
    50                  55                  60

atc gtg gtt gtg aaa cag aga agc aaa gct ttt gca agt ata ttt tct   240
Ile Val Val Val Lys Gln Arg Ser Lys Ala Phe Ala Ser Ile Phe Ser
65                  70                  75                  80

tcg agt cgt gat caa cag aca act tct gtt gct tcc cct agt gtg cct   288
Ser Ser Arg Asp Gln Gln Thr Thr Ser Val Ala Ser Pro Ser Val Pro
                85                  90                  95

gtg cca cca cca tct tca tca acc ata gga tca cca ctt ttc tgg att   336
Val Pro Pro Pro Ser Ser Ser Thr Ile Gly Ser Pro Leu Phe Trp Ile
            100                 105                 110

ggt gtt ggt gtt ggt cta tca gct ttg ttc tca tat gta act tca aat   384
Gly Val Gly Val Gly Leu Ser Ala Leu Phe Ser Tyr Val Thr Ser Asn
        115                 120                 125

tta aag aaa tat gca atg caa aca gct atg aag acg atg atg aac caa   432
Leu Lys Lys Tyr Ala Met Gln Thr Ala Met Lys Thr Met Met Asn Gln
    130                 135                 140

atg aat acg caa aat agc cag ttt aat aat tct gga ttc cca tca gga   480
Met Asn Thr Gln Asn Ser Gln Phe Asn Asn Ser Gly Phe Pro Ser Gly
145                 150                 155                 160

tca cct ttt ccg ttt cca ttt cct cct caa aca agt cct gct tcc tcg   528
Ser Pro Phe Pro Phe Pro Phe Pro Pro Gln Thr Ser Pro Ala Ser Ser
                165                 170                 175

cca ttc caa tct caa tcc cag tct tca ggt gct acc gtt gat gtg aca   576
Pro Phe Gln Ser Gln Ser Gln Ser Ser Gly Ala Thr Val Asp Val Thr
            180                 185                 190

gcg aca aaa gta gag aca cct cct tca act aaa ccg aaa cct aca cct   624
Ala Thr Lys Val Glu Thr Pro Pro Ser Thr Lys Pro Lys Pro Thr Pro
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        195                 200                 205

gca aag gat ata gag gtg gat aag cca agt gtt gtc tta gag gca agc   672
Ala Lys Asp Ile Glu Val Asp Lys Pro Ser Val Val Leu Glu Ala Ser
    210                 215                 220

aaa gag aag aaa gaa gaa aag aac tat gcc ttt gaa gac att tca ccc   720
Lys Glu Lys Lys Glu Glu Lys Asn Tyr Ala Phe Glu Asp Ile Ser Pro
225                 230                 235                 240

gag gaa acc aca aaa gaa agc cca ttt agc aac tat gca gaa gtc tct   768
Glu Glu Thr Thr Lys Glu Ser Pro Phe Ser Asn Tyr Ala Glu Val Ser
                245                 250                 255

gaa act aat tcc ccc aaa gaa act cgc ttg ttt gag gat gtc ttg caa   816
Glu Thr Asn Ser Pro Lys Glu Thr Arg Leu Phe Glu Asp Val Leu Gln
            260                 265                 270

aat gga gct ggt ccg gca aat ggt gcc act gct tca gag gtt ttt caa   864
Asn Gly Ala Gly Pro Ala Asn Gly Ala Thr Ala Ser Glu Val Phe Gln
        275                 280                 285

tct ttg ggt ggt ggg aaa gga ggg ccg ggt tta tct gta gaa gct tta   912
Ser Leu Gly Gly Gly Lys Gly Gly Pro Gly Leu Ser Val Glu Ala Leu
    290                 295                 300

gag aaa atg atg gaa gat cca aca gtc cag aag atg gtt tac cca tac   960
Glu Lys Met Met Glu Asp Pro Thr Val Gln Lys Met Val Tyr Pro Tyr
305                 310                 315                 320

ttg cct gag gag atg agg aac cca gaa act ttc aaa tgg atg ctt aaa  1008
Leu Pro Glu Glu Met Arg Asn Pro Glu Thr Phe Lys Trp Met Leu Lys
                325                 330                 335

aat cct cag tac cgt caa caa cta cag gac atg ttg aat aat atg agt  1056
Asn Pro Gln Tyr Arg Gln Gln Leu Gln Asp Met Leu Asn Asn Met Ser
            340                 345                 350

ggg agt ggt gaa tgg gac aag cga atg aca gat aca ttg aag aat ttt  1104
Gly Ser Gly Glu Trp Asp Lys Arg Met Thr Asp Thr Leu Lys Asn Phe
        355                 360                 365

gac ctg aat agt cct gaa gtg aag caa caa ttc aat caa ata gga cta  1152
Asp Leu Asn Ser Pro Glu Val Lys Gln Gln Phe Asn Gln Ile Gly Leu
    370                 375                 380

act cca gaa gaa gtc ata tct aag atc atg gag aac cct gat gtt gcc  1200
Thr Pro Glu Glu Val Ile Ser Lys Ile Met Glu Asn Pro Asp Val Ala
385                 390                 395                 400

atg gca ttc cag aat cct aga gtc caa gca gcg tta atg gaa tgc tca  1248
Met Ala Phe Gln Asn Pro Arg Val Gln Ala Ala Leu Met Glu Cys Ser
                405                 410                 415

gag aac cca atg aac atc atg aag tac caa aac gac aaa gag gta atg  1296
Glu Asn Pro Met Asn Ile Met Lys Tyr Gln Asn Asp Lys Glu Val Met
            420                 425                 430

gat gtg ttc aac aag ata tcg cag ctc ttc cca gga atg acg ggt tga  1344
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        35                  40                  45
Ser Ala Gln Ser Gln Ser Pro Ser Ser Arg Pro Glu Asn Thr Gly Glu
    50                  55                  60
Ile Val Val Val Lys Gln Arg Ser Lys Ala Phe Ala Ser Ile Phe Ser
65                  70                  75                  80
Ser Ser Arg Asp Gln Gln Thr Thr Ser Val Ala Ser Pro Ser Val Pro
                85                  90                  95
Val Pro Pro Pro Ser Ser Ser Thr Ile Gly Ser Pro Leu Phe Trp Ile
            100                 105                 110
Gly Val Gly Val Gly Leu Ser Ala Leu Phe Ser Tyr Val Thr Ser Asn
        115                 120                 125
Leu Lys Lys Tyr Ala Met Gln Thr Ala Met Lys Thr Met Met Asn Gln
    130                 135                 140
Met Asn Thr Gln Asn Ser Gln Phe Asn Asn Ser Gly Phe Pro Ser Gly
145                 150                 155                 160
Ser Pro Phe Pro Phe Pro Phe Pro Pro Gln Thr Ser Pro Ala Ser Ser
                165                 170                 175
Pro Phe Gln Ser Gln Ser Gln Ser Ser Gly Ala Thr Val Asp Val Thr
            180                 185                 190
Ala Thr Lys Val Glu Thr Pro Pro Ser Thr Lys Pro Lys Pro Thr Pro
        195                 200                 205
Ala Lys Asp Ile Glu Val Asp Lys Pro Ser Val Val Leu Glu Ala Ser
    210                 215                 220
Lys Glu Lys Lys Glu Glu Lys Asn Tyr Ala Phe Glu Asp Ile Ser Pro
225                 230                 235                 240
Glu Glu Thr Thr Lys Glu Ser Pro Phe Ser Asn Tyr Ala Glu Val Ser
                245                 250                 255
Glu Thr Asn Ser Pro Lys Glu Thr Arg Leu Phe Glu Asp Val Leu Gln
            260                 265                 270
Asn Gly Ala Gly Pro Ala Asn Gly Ala Thr Ala Ser Glu Val Phe Gln
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Ser Leu Gly Gly Gly Lys Gly Gly Pro Gly Leu Ser Val Glu Ala Leu
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Glu Lys Met Met Glu Asp Pro Thr Val Gln Lys Met Val Tyr Pro Tyr
305                 310                 315                 320
Leu Pro Glu Glu Met Arg Asn Pro Glu Thr Phe Lys Trp Met Leu Lys
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Asn Pro Gln Tyr Arg Gln Gln Leu Gln Asp Met Leu Asn Asn Met Ser
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Gly Ser Gly Glu Trp Asp Lys Arg Met Thr Asp Thr Leu Lys Asn Phe
        355                 360                 365
Asp Leu Asn Ser Pro Glu Val Lys Gln Gln Phe Asn Gln Ile Gly Leu
    370                 375                 380
Thr Pro Glu Glu Val Ile Ser Lys Ile Met Glu Asn Pro Asp Val Ala
385                 390                 395                 400
Met Ala Phe Gln Asn Pro Arg Val Gln Ala Ala Leu Met Glu Cys Ser
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Glu Asn Pro Met Asn Ile Met Lys Tyr Gln Asn Asp Lys Glu Val Met
            420                 425                 430
Asp Val Phe Asn Lys Ile Ser Gln Leu Phe Pro Gly Met Thr Gly
        435                 440                 445
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<210> 7
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<213> Arabidopsis thaliana

<220>
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<222> (1)..(2163)

<400> 7

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atg tct agg gag gat ttt agt gat aca ctt cga gta ctt gtt gca act   48
Met Ser Arg Glu Asp Phe Ser Asp Thr Leu Arg Val Leu Val Ala Thr
  1               5                  10                  15

gat tgc cac ttg ggc tac atg gag aag gat gaa att agg cgg cat gat   96
Asp Cys His Leu Gly Tyr Met Glu Lys Asp Glu Ile Arg Arg His Asp
             20                  25                  30

tca ttt aag gct ttc gaa gag ata tgt tct ata gct gag gag aaa cag   144
Ser Phe Lys Ala Phe Glu Glu Ile Cys Ser Ile Ala Glu Glu Lys Gln
         35                  40                  45

gtg gac ttc tta ctc ctc gga ggt gat ctt ttt cat gag aat aaa ccc   192
Val Asp Phe Leu Leu Leu Gly Gly Asp Leu Phe His Glu Asn Lys Pro
     50                  55                  60

tct aga act acg tta gtt aaa gcc att gaa att ctt cgt cgc cac tgt   240
Ser Arg Thr Thr Leu Val Lys Ala Ile Glu Ile Leu Arg Arg His Cys
 65                  70                  75                  80

ctg aat gat aaa cca gtg cag ttt caa gta gtc agc gac cag aca gta   288
Leu Asn Asp Lys Pro Val Gln Phe Gln Val Val Ser Asp Gln Thr Val
                 85                  90                  95

aat ttt cag aat gcg ttt ggt caa gtc aat tac gag gat cca cac ttc   336
Asn Phe Gln Asn Ala Phe Gly Gln Val Asn Tyr Glu Asp Pro His Phe
            100                 105                 110

aat gta ggc ttg ccc gtg ttc agt att cat gga aac cat gat gat cca   384
Asn Val Gly Leu Pro Val Phe Ser Ile His Gly Asn His Asp Asp Pro
        115                 120                 125

gcc gga gtg gac aat ctt tct gca att gat att ctt tcc gca tgc aac   432
Ala Gly Val Asp Asn Leu Ser Ala Ile Asp Ile Leu Ser Ala Cys Asn
    130                 135                 140

ctt gtg aac tat ttt gga aag atg gtt ctt ggt ggt tct ggt gtt ggc   480
Leu Val Asn Tyr Phe Gly Lys Met Val Leu Gly Gly Ser Gly Val Gly
145                 150                 155                 160

cag att act ctc tac cct ata ctt atg aag aag ggc tca aca acc gtg   528
Gln Ile Thr Leu Tyr Pro Ile Leu Met Lys Lys Gly Ser Thr Thr Val
                165                 170                 175

gct ctc tat ggt tta gga aac atc agg gat gaa cgt ctc aat aga atg   576
Ala Leu Tyr Gly Leu Gly Asn Ile Arg Asp Glu Arg Leu Asn Arg Met
            180                 185                 190

ttt cag acc cca cat gct gtc caa tgg atg agg cct gaa gtt caa gaa   624
Phe Gln Thr Pro His Ala Val Gln Trp Met Arg Pro Glu Val Gln Glu
        195                 200                 205

gga tgt gat gtt tct gac tgg ttc aac att ctg gtg ctt cat caa aat   672
Gly Cys Asp Val Ser Asp Trp Phe Asn Ile Leu Val Leu His Gln Asn
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    210                 215                 220

agg gtg aaa tca aac ccc aaa aat gca ata agt gag cac ttt ctt cca   720
Arg Val Lys Ser Asn Pro Lys Asn Ala Ile Ser Glu His Phe Leu Pro
225                 230                 235                 240

cgt ttc ctc gac ttc att gtg tgg ggc cat gag cat gaa tgc cta atc   768
Arg Phe Leu Asp Phe Ile Val Trp Gly His Glu His Glu Cys Leu Ile
                245                 250                 255

gac ccc cag gag gta tct gga atg ggc ttc cac atc aca caa cca gga   816
Asp Pro Gln Glu Val Ser Gly Met Gly Phe His Ile Thr Gln Pro Gly
            260                 265                 270

tct tct gtg gca aca tca ctt att gat ggg gaa tcg aag cca aaa cat   864
Ser Ser Val Ala Thr Ser Leu Ile Asp Gly Glu Ser Lys Pro Lys His
        275                 280                 285

gtt ctt ctc tta gaa atc aag gga aat caa tat cgt cct acg aag ata   912
Val Leu Leu Leu Glu Ile Lys Gly Asn Gln Tyr Arg Pro Thr Lys Ile
    290                 295                 300

cct ttg aca tct gtg agg cct ttt gag tat aca gag att gtt tta aag   960
Pro Leu Thr Ser Val Arg Pro Phe Glu Tyr Thr Glu Ile Val Leu Lys
305                 310                 315                 320

gat gaa agt gat att gat ccc aat gat caa aac tca att ctg gaa cac  1008
Asp Glu Ser Asp Ile Asp Pro Asn Asp Gln Asn Ser Ile Leu Glu His
                325                 330                 335

ttg gat aaa gtg gtc aga aat cta ata gag aaa gct agc aaa aaa gct  1056
Leu Asp Lys Val Val Arg Asn Leu Ile Glu Lys Ala Ser Lys Lys Ala
            340                 345                 350

gtt aac aga tca gag atc aaa ctc cca ttg gtt cga atc aag gta gat  1104
Val Asn Arg Ser Glu Ile Lys Leu Pro Leu Val Arg Ile Lys Val Asp
        355                 360                 365

tat tct gga ttt atg acg ata aat cct caa aga ttt gga cag aaa tat  1152
Tyr Ser Gly Phe Met Thr Ile Asn Pro Gln Arg Phe Gly Gln Lys Tyr
    370                 375                 380

gtg gga aag gtt gca aat ccc cag gac att ttg ata ttt tcc aag gct  1200
Val Gly Lys Val Ala Asn Pro Gln Asp Ile Leu Ile Phe Ser Lys Ala
385                 390                 395                 400

tct aag aag ggt cgg agc gaa gcc aac atc gat gat tct gag cgg ctt  1248
Ser Lys Lys Gly Arg Ser Glu Ala Asn Ile Asp Asp Ser Glu Arg Leu
                405                 410                 415

cgt cca gaa gaa ctg aac cag cag aat ata gaa gct tta gta gct gaa  1296
Arg Pro Glu Glu Leu Asn Gln Gln Asn Ile Glu Ala Leu Val Ala Glu
            420                 425                 430

agc aac ctg aaa atg gag atc ctt cca gtt aac gat ctg gat gtt gct  1344
Ser Asn Leu Lys Met Glu Ile Leu Pro Val Asn Asp Leu Asp Val Ala
        435                 440                 445

ctt cac aat ttt gtg aac aag gat gat aaa cta gcc ttc tac tca tgc  1392
Leu His Asn Phe Val Asn Lys Asp Asp Lys Leu Ala Phe Tyr Ser Cys
    450                 455                 460

gtt cag tac aat ctt caa gag act cgt ggt aaa ctt gca aag gat tca  1440
Val Gln Tyr Asn Leu Gln Glu Thr Arg Gly Lys Leu Ala Lys Asp Ser
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465                 470                 475                 480

gat gcc aag aaa ttt gag gaa gat gac ttg att ctt aaa gtg gga gag   1488
Asp Ala Lys Lys Phe Glu Glu Asp Asp Leu Ile Leu Lys Val Gly Glu
                485                 490                 495

tgc tta gag gaa cgc ttg aaa gat agg tcc act cga ccc act ggt tcc   1536
Cys Leu Glu Glu Arg Leu Lys Asp Arg Ser Thr Arg Pro Thr Gly Ser
            500                 505                 510

tca cag ttt tta tcc act gga ttg act tca gag aat ttg aca aaa gga   1584
Ser Gln Phe Leu Ser Thr Gly Leu Thr Ser Glu Asn Leu Thr Lys Gly
        515                 520                 525

agc agt ggc atc gcg aat gct tcg ttc agt gat gat gaa gac aca act   1632
Ser Ser Gly Ile Ala Asn Ala Ser Phe Ser Asp Asp Glu Asp Thr Thr
    530                 535                 540

cag atg tct ggt tta gct cct ccc act aga gga cga aga ggt tca tcc   1680
Gln Met Ser Gly Leu Ala Pro Pro Thr Arg Gly Arg Arg Gly Ser Ser
545                 550                 555                 560

act gct aat aca act cgt ggt aga gct aaa gcc cca acc aga gga cga   1728
Thr Ala Asn Thr Thr Arg Gly Arg Ala Lys Ala Pro Thr Arg Gly Arg
                565                 570                 575

ggc cgt ggt aag gcc tca agt gcg atg aag caa acc act ctt gat agt   1776
Gly Arg Gly Lys Ala Ser Ser Ala Met Lys Gln Thr Thr Leu Asp Ser
            580                 585                 590

tct ctt ggt ttc cgc cag tct caa aga tct gct tcg gct gct gct tca   1824
Ser Leu Gly Phe Arg Gln Ser Gln Arg Ser Ala Ser Ala Ala Ala Ser
        595                 600                 605

gct gcc ttc aaa agt gct tcc acc att gga gaa gat gat gta gat tct   1872
Ala Ala Phe Lys Ser Ala Ser Thr Ile Gly Glu Asp Asp Val Asp Ser
    610                 615                 620

cct tca agc gaa gaa gtc gag cct gaa gat ttt aac aaa cct gac agc   1920
Pro Ser Ser Glu Glu Val Glu Pro Glu Asp Phe Asn Lys Pro Asp Ser
625                 630                 635                 640

agt tcg gag gac gat gag agc act aaa ggc aaa gga cgt aaa aga cca   1968
Ser Ser Glu Asp Asp Glu Ser Thr Lys Gly Lys Gly Arg Lys Arg Pro
                645                 650                 655

gct act act aag aga ggc aga ggt aga ggt tct ggg act tca aaa cgt   2016
Ala Thr Thr Lys Arg Gly Arg Gly Arg Gly Ser Gly Thr Ser Lys Arg
            660                 665                 670

ggt aga aaa aac gaa agc tct tct tca ctt aat agg cta ctc agt agc   2064
Gly Arg Lys Asn Glu Ser Ser Ser Ser Leu Asn Arg Leu Leu Ser Ser
        675                 680                 685

aaa gac gat gac gag gac gaa gat gat gaa gac aga gaa aag aag ctt   2112
Lys Asp Asp Asp Glu Asp Glu Asp Asp Glu Asp Arg Glu Lys Lys Leu
    690                 695                 700

aac aaa tct cag cct cgg gtt aca agg aac tat gga gct cta aga aga   2160
Asn Lys Ser Gln Pro Arg Val Thr Arg Asn Tyr Gly Ala Leu Arg Arg
705                 710                 715                 720

taa                                                             2163
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<213> Arabidopsis thaliana

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Ser Phe Lys Ala Phe Glu Glu Ile Cys Ser Ile Ala Glu Glu Lys Gln
35 40 45
Val Asp Phe Leu Leu Leu Gly Gly Asp Leu Phe His Glu Asn Lys Pro
50 55 60
Ser Arg Thr Thr Leu Val Lys Ala Ile Glu Ile Leu Arg Arg His Cys
65 70 75 80
Leu Asn Asp Lys Pro Val Gln Phe Gln Val Val Ser Asp Gln Thr Val
85 90 95
Asn Phe Gln Asn Ala Phe Gly Gln Val Asn Tyr Glu Asp Pro His Phe
100 105 110
Asn Val Gly Leu Pro Val Phe Ser Ile His Gly Asn His Asp Asp Pro
115 120 125
Ala Gly Val Asp Asn Leu Ser Ala Ile Asp Ile Leu Ser Ala Cys Asn
130 135 140
Leu Val Asn Tyr Phe Gly Lys Met Val Leu Gly Gly Ser Gly Val Gly
145 150 155 160
Gln Ile Thr Leu Tyr Pro Ile Leu Met Lys Lys Gly Ser Thr Thr Val
165 170 175
Ala Leu Tyr Gly Leu Gly Asn Ile Arg Asp Glu Arg Leu Asn Arg Met
180 185 190
Phe Gln Thr Pro His Ala Val Gln Trp Met Arg Pro Glu Val Gln Glu
195 200 205
Gly Cys Asp Val Ser Asp Trp Phe Asn Ile Leu Val Leu His Gln Asn
210 215 220
Arg Val Lys Ser Asn Pro Lys Asn Ala Ile Ser Glu His Phe Leu Pro
225 230 235 240
Arg Phe Leu Asp Phe Ile Val Trp Gly His Glu His Glu Cys Leu Ile
245 250 255
Asp Pro Gln Glu Val Ser Gly Met Gly Phe His Ile Thr Gln Pro Gly
260 265 270
Ser Ser Val Ala Thr Ser Leu Ile Asp Gly Glu Ser Lys Pro Lys His
275 280 285
Val Leu Leu Leu Glu Ile Lys Gly Asn Gln Tyr Arg Pro Thr Lys Ile
290 295 300
Pro Leu Thr Ser Val Arg Pro Phe Glu Tyr Thr Glu Ile Val Leu Lys
305 310 315 320
Asp Glu Ser Asp Ile Asp Pro Asn Asp Gln Asn Ser Ile Leu Glu His
325 330 335
Leu Asp Lys Val Val Arg Asn Leu Ile Glu Lys Ala Ser Lys Lys Ala
340 345 350
Val Asn Arg Ser Glu Ile Lys Leu Pro Leu Val Arg Ile Lys Val Asp
355 360 365
Tyr Ser Gly Phe Met Thr Ile Asn Pro Gln Arg Phe Gly Gln Lys Tyr
370 375 380
Val Gly Lys Val Ala Asn Pro Gln Asp Ile Leu Ile Phe Ser Lys Ala
385 390 395 400
Ser Lys Lys Gly Arg Ser Glu Ala Asn Ile Asp Asp Ser Glu Arg Leu
405 410 415
Arg Pro Glu Glu Leu Asn Gln Gln Asn Ile Glu Ala Leu Val Ala Glu
420 425 430
Ser Asn Leu Lys Met Glu Ile Leu Pro Val Asn Asp Leu Asp Val Ala
435 440 445

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Leu His Asn Phe Val Asn Lys Asp Asp Lys Leu Ala Phe Tyr Ser Cys
    450                 455                 460
Val Gln Tyr Asn Leu Gln Glu Thr Arg Gly Lys Leu Ala Lys Asp Ser
465                 470                 475                 480
Asp Ala Lys Lys Phe Glu Glu Asp Asp Leu Ile Leu Lys Val Gly Glu
                485                 490                 495
Cys Leu Glu Glu Arg Leu Lys Asp Arg Ser Thr Arg Pro Thr Gly Ser
            500                 505                 510
Ser Gln Phe Leu Ser Thr Gly Leu Thr Ser Glu Asn Leu Thr Lys Gly
        515                 520                 525
Ser Ser Gly Ile Ala Asn Ala Ser Phe Ser Asp Asp Glu Asp Thr Thr
    530                 535                 540
Gln Met Ser Gly Leu Ala Pro Pro Thr Arg Gly Arg Arg Gly Ser Ser
545                 550                 555                 560
Thr Ala Asn Thr Thr Arg Gly Arg Ala Lys Ala Pro Thr Arg Gly Arg
                565                 570                 575
Gly Arg Gly Lys Ala Ser Ser Ala Met Lys Gln Thr Thr Leu Asp Ser
            580                 585                 590
Ser Leu Gly Phe Arg Gln Ser Gln Arg Ser Ala Ser Ala Ala Ala Ser
        595                 600                 605
Ala Ala Phe Lys Ser Ala Ser Thr Ile Gly Glu Asp Asp Val Asp Ser
    610                 615                 620
Pro Ser Ser Glu Glu Val Glu Pro Glu Asp Phe Asn Lys Pro Asp Ser
625                 630                 635                 640
Ser Ser Glu Asp Asp Glu Ser Thr Lys Gly Lys Gly Arg Lys Arg Pro
                645                 650                 655
Ala Thr Thr Lys Arg Gly Arg Gly Arg Gly Ser Gly Thr Ser Lys Arg
            660                 665                 670
Gly Arg Lys Asn Glu Ser Ser Ser Ser Leu Asn Arg Leu Leu Ser Ser
        675                 680                 685
Lys Asp Asp Asp Glu Asp Glu Asp Asp Glu Asp Arg Glu Lys Lys Leu
    690                 695                 700
Asn Lys Ser Gln Pro Arg Val Thr Arg Asn Tyr Gly Ala Leu Arg Arg
705                 710                 715                 720
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<213> Arabidopsis thaliana

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Met Met Thr Leu Asn Ser Leu Ser Pro Ala Glu Ser Lys Ala Ile Ser
  1               5                  10                  15

ttc ttg gat acc tcc agg ttc aat cca atc cct aaa ctc tca ggt ggg   96
Phe Leu Asp Thr Ser Arg Phe Asn Pro Ile Pro Lys Leu Ser Gly Gly
             20                  25                  30

ttt agt ttg agg agg agg gat caa ggg aga ggt ttt gga aaa ggt gtt   144
Phe Ser Leu Arg Arg Arg Asp Gln Gly Arg Gly Phe Gly Lys Gly Val
         35                  40                  45

aag tgt tca gtg aaa gtg cag cag caa caa caa cct cct cca gca tgg   192
Lys Cys Ser Val Lys Val Gln Gln Gln Gln Gln Pro Pro Pro Ala Trp
     50                  55                  60

cct ggg aga gct gtt cct gag gcg cct cgt caa tct tgg gat gga cca   240
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Pro Gly Arg Ala Val Pro Glu Ala Pro Arg Gln Ser Trp Asp Gly Pro
 65                  70                  75                  80

aaa ccc atc tct atc gtt gga tct act ggt tcc atc ggc act cag aca   288
Lys Pro Ile Ser Ile Val Gly Ser Thr Gly Ser Ile Gly Thr Gln Thr
                 85                  90                  95

ttg gat att gtg gct gag aat cct gac aaa ttt aga gtt gtg gct cta   336
Leu Asp Ile Val Ala Glu Asn Pro Asp Lys Phe Arg Val Val Ala Leu
            100                 105                 110

gct gct ggt tcg aat gtt act cta ctt gct gat cag gta agg aga ttt   384
Ala Ala Gly Ser Asn Val Thr Leu Leu Ala Asp Gln Val Arg Arg Phe
        115                 120                 125

aag cct gcg ttg gtt gct gtt aga aac gag tca ctg att aat gag ctt   432
Lys Pro Ala Leu Val Ala Val Arg Asn Glu Ser Leu Ile Asn Glu Leu
    130                 135                 140

aaa gag gct tta gct gat ttg gac tat aaa ccc gag att att cca gga   480
Lys Glu Ala Leu Ala Asp Leu Asp Tyr Lys Pro Glu Ile Ile Pro Gly
145                 150                 155                 160

gag cta gga gtg att gag gtt gcc cga cat cct gaa gct gta acc gtt   528
Glu Leu Gly Val Ile Glu Val Ala Arg His Pro Glu Ala Val Thr Val
                165                 170                 175

gtt acc gga ata gta ggt tgt gcg gga ctg aag cct acg gtt gct gca   576
Val Thr Gly Ile Val Gly Cys Ala Gly Leu Lys Pro Thr Val Ala Ala
            180                 185                 190

att gaa gca gga aag gac att gct ctt gca aac aaa gag aca tta atc   624
Ile Glu Ala Gly Lys Asp Ile Ala Leu Ala Asn Lys Glu Thr Leu Ile
        195                 200                 205

gca ggt ggt cct ttc gtg ctt ccg ctt gcc aac aaa cat aat gta aag   672
Ala Gly Gly Pro Phe Val Leu Pro Leu Ala Asn Lys His Asn Val Lys
    210                 215                 220

att ctt ccg gca gat tca gaa cat tct gcc ata ttt cag tgt att caa   720
Ile Leu Pro Ala Asp Ser Glu His Ser Ala Ile Phe Gln Cys Ile Gln
225                 230                 235                 240

ggt ttg cct gaa ggc gct ctg cgc aag ata atc ttg act gca tct ggt   768
Gly Leu Pro Glu Gly Ala Leu Arg Lys Ile Ile Leu Thr Ala Ser Gly
                245                 250                 255

gga gct ttt agg gat tgg cct gtc gaa aag cta aag gaa gtt aaa gta   816
Gly Ala Phe Arg Asp Trp Pro Val Glu Lys Leu Lys Glu Val Lys Val
            260                 265                 270

gcg gat gcg ttg aag cat cca aac tgg aac atg gga aag aaa atc act   864
Ala Asp Ala Leu Lys His Pro Asn Trp Asn Met Gly Lys Lys Ile Thr
        275                 280                 285

gtg gac tct gct acg ctt ttc aac aag ggt ctt gag gtc att gaa gcg   912
Val Asp Ser Ala Thr Leu Phe Asn Lys Gly Leu Glu Val Ile Glu Ala
    290                 295                 300

cat tat ttg ttt gga gct gag tat gac gat ata gag att gtc att cat   960
His Tyr Leu Phe Gly Ala Glu Tyr Asp Asp Ile Glu Ile Val Ile His
305                 310                 315                 320

cct caa agt atc ata cat tcc atg att gaa aca cag gat tca tct gtg   1008
```

```
Pro Gln Ser Ile Ile His Ser Met Ile Glu Thr Gln Asp Ser Ser Val
                325                 330                 335

ctt gct caa ttg ggt tgg cct gat atg cgt tta ccg att ctc tac acc   1056
Leu Ala Gln Leu Gly Trp Pro Asp Met Arg Leu Pro Ile Leu Tyr Thr
            340                 345                 350

atg tca tgg ccc gat aga gtt cct tgt tct gaa gta act tgg cct aga   1104
Met Ser Trp Pro Asp Arg Val Pro Cys Ser Glu Val Thr Trp Pro Arg
        355                 360                 365

ctt gac ctt tgc aaa ctc ggt tca ttg act ttc aag aaa cca gac aat   1152
Leu Asp Leu Cys Lys Leu Gly Ser Leu Thr Phe Lys Lys Pro Asp Asn
    370                 375                 380

gtg aaa tac cca tcc atg gat ctt gct tat gct gct gga cga gct gga   1200
Val Lys Tyr Pro Ser Met Asp Leu Ala Tyr Ala Ala Gly Arg Ala Gly
385                 390                 395                 400

ggc aca atg act gga gtt ctc agc gcc gcc aat gag aaa gct gtt gaa   1248
Gly Thr Met Thr Gly Val Leu Ser Ala Ala Asn Glu Lys Ala Val Glu
                405                 410                 415

atg ttt att gat gaa aag ata agc tat ttg gat atc ttc aag gtt gtg   1296
Met Phe Ile Asp Glu Lys Ile Ser Tyr Leu Asp Ile Phe Lys Val Val
            420                 425                 430

gaa tta aca tgc gat aaa cat cga aac gag ttg gta aca tca ccg tct   1344
Glu Leu Thr Cys Asp Lys His Arg Asn Glu Leu Val Thr Ser Pro Ser
        435                 440                 445

ctt gaa gag att gtt cac tat gac ttg tgg gca cgt gaa tat gcc gcg   1392
Leu Glu Glu Ile Val His Tyr Asp Leu Trp Ala Arg Glu Tyr Ala Ala
    450                 455                 460

gat gtg cag ctt tct tct ggt gct agg cca gtt cat gca tga           1434
Asp Val Gln Leu Ser Ser Gly Ala Arg Pro Val His Ala
465                 470                 475
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<210> 10
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<212> PRT
<213> Arabidopsis thaliana

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             20                  25                  30
Phe Ser Leu Arg Arg Arg Asp Gln Gly Arg Gly Phe Gly Lys Gly Val
         35                  40                  45
Lys Cys Ser Val Lys Val Gln Gln Gln Gln Gln Pro Pro Pro Ala Trp
     50                  55                  60
Pro Gly Arg Ala Val Pro Glu Ala Pro Arg Gln Ser Trp Asp Gly Pro
 65                  70                  75                  80
Lys Pro Ile Ser Ile Val Gly Ser Thr Gly Ser Ile Gly Thr Gln Thr
                 85                  90                  95
Leu Asp Ile Val Ala Glu Asn Pro Asp Lys Phe Arg Val Val Ala Leu
            100                 105                 110
Ala Ala Gly Ser Asn Val Thr Leu Leu Ala Asp Gln Val Arg Arg Phe
        115                 120                 125
Lys Pro Ala Leu Val Ala Val Arg Asn Glu Ser Leu Ile Asn Glu Leu
    130                 135                 140
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Lys Glu Ala Leu Ala Asp Leu Asp Tyr Lys Pro Glu Ile Ile Pro Gly
145                 150                 155                 160
Glu Leu Gly Val Ile Glu Val Ala Arg His Pro Glu Ala Val Thr Val
                165                 170                 175
Val Thr Gly Ile Val Gly Cys Ala Gly Leu Lys Pro Thr Val Ala Ala
            180                 185                 190
Ile Glu Ala Gly Lys Asp Ile Ala Leu Ala Asn Lys Glu Thr Leu Ile
        195                 200                 205
Ala Gly Gly Pro Phe Val Leu Pro Leu Ala Asn Lys His Asn Val Lys
    210                 215                 220
Ile Leu Pro Ala Asp Ser Glu His Ser Ala Ile Phe Gln Cys Ile Gln
225                 230                 235                 240
Gly Leu Pro Glu Gly Ala Leu Arg Lys Ile Ile Leu Thr Ala Ser Gly
                245                 250                 255
Gly Ala Phe Arg Asp Trp Pro Val Glu Lys Leu Lys Glu Val Lys Val
            260                 265                 270
Ala Asp Ala Leu Lys His Pro Asn Trp Asn Met Gly Lys Lys Ile Thr
        275                 280                 285
Val Asp Ser Ala Thr Leu Phe Asn Lys Gly Leu Glu Val Ile Glu Ala
    290                 295                 300
His Tyr Leu Phe Gly Ala Glu Tyr Asp Asp Ile Glu Ile Val Ile His
305                 310                 315                 320
Pro Gln Ser Ile Ile His Ser Met Ile Glu Thr Gln Asp Ser Ser Val
                325                 330                 335
Leu Ala Gln Leu Gly Trp Pro Asp Met Arg Leu Pro Ile Leu Tyr Thr
            340                 345                 350
Met Ser Trp Pro Asp Arg Val Pro Cys Ser Glu Val Thr Trp Pro Arg
        355                 360                 365
Leu Asp Leu Cys Lys Leu Gly Ser Leu Thr Phe Lys Lys Pro Asp Asn
    370                 375                 380
Val Lys Tyr Pro Ser Met Asp Leu Ala Tyr Ala Ala Gly Arg Ala Gly
385                 390                 395                 400
Gly Thr Met Thr Gly Val Leu Ser Ala Ala Asn Glu Lys Ala Val Glu
                405                 410                 415
Met Phe Ile Asp Glu Lys Ile Ser Tyr Leu Asp Ile Phe Lys Val Val
            420                 425                 430
Glu Leu Thr Cys Asp Lys His Arg Asn Glu Leu Val Thr Ser Pro Ser
        435                 440                 445
Leu Glu Glu Ile Val His Tyr Asp Leu Trp Ala Arg Glu Tyr Ala Ala
    450                 455                 460
Asp Val Gln Leu Ser Ser Gly Ala Arg Pro Val His Ala
465                 470                 475
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<213> Artificial Sequence

<220>
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oligonucleotide

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gcggacatct acatttttga 20

<210> 12
<211> 1353
<212> DNA
<213> Arabidopsis thaliana

<400> 12

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gtttcatcat tctcaaggca cttacagttt ccaactcttt gcttgtaact tagtttctgt 180
ttgttcttaa acatattttg aggatttgca gatatggaca gagcaagttg taagtatgta 240
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gcccgggaaa gaattaaaag aggttttctt tgcgccagga atgttcagcg actgttgata 540
tcataccact attcttgaga gcatctcctg attttgaagt aaaggaaggt gatttgattg 600
tatcgtatcc tgcaaaagag gatcacaaaa tagctgagaa tatggtttgt atccaccata 660
ttccgagtgg agtaacacta caatcttcag gtattcttga gtgtgttgtt agttgttaca 720
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cggtttagag attctggacc tgaaatcggt cttggatgga aacattggac cactccttgg 1020
agctcatatt agcatgagaa gatcaattga tgcgatttag gcttaatcaa ttggtacttt 1080
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<212> DNA
<213> Arabidopsis thaliana

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aaaa 184

<210> 14
<211> 2170
<212> DNA
<213> Arabidopsis thaliana

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<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

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<210> 16
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

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<210> 17
<211> 113
<212> DNA
<213> Arabidopsis thaliana

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<210> 18
<211> 218
<212> DNA
<213> Arabidopsis thaliana

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<210> 19
<211> 4140
<212> DNA
<213> Arabidopsis thaliana

<400> 19
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<210> 20
<211> 77
<212> DNA
<213> Arabidopsis thaliana

<400> 20
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caaagaaaca attagat 77

<210> 21
<211> 354
<212> DNA
<213> Arabidopsis thaliana

<400> 21
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<210> 22
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 22
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<210> 23
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:

oligonucleotide

<400> 23
ccattgtgtc tccctcccgc tgtt 24

<210> 24
<211> 5077
<212> DNA
<213> Arabidopsis thaliana

<400> 24
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<210> 25
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 25
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<210> 26
<211> 255
<212> DNA
<213> Arabidopsis thaliana

<400> 26
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<211> 2935
<212> DNA

<213> Arabidopsis thaliana

<400> 27
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gaactccagt cattgtgcct ccagctcgtc cagcagcata agcaagatcc atggatgggt 360
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aagaagagag gaagaagaag aaacctgaga gtttagggat tggattgaac ctggaggtat 2880
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<211> 1434
<212> DNA
<213> Arabidopsis thaliana

<220>
<221> misc_feature
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<223> y = t or c

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<210> 29
<211> 477
<212> PRT
<213> Arabidopsis thaliana

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<223> Xaa = Asp or Asn

<220>
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<223> Xaa = Pro or Leu

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<223> Xaa = Leu or Gln

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<220>
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<222> (465)
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Phe Leu Asp Thr Ser Arg Phe Asn Pro Ile Pro Lys Leu Ser Gly Gly
20 25 30

Phe Ser Leu Arg Arg Arg Xaa Gln Gly Arg Gly Phe Gly Lys Gly Val
35 40 45

Lys Cys Ser Val Lys Val Gln Gln Gln Gln Pro Pro Pro Ala Trp
50 55 60

Pro Gly Arg Ala Val Pro Glu Ala Pro Arg Gln Ser Trp Asp Gly Pro
65 70 75 80

Lys Pro Ile Ser Ile Val Gly Ser Thr Gly Ser Ile Gly Thr Gln Thr
85 90 95

Leu Asp Ile Val Ala Glu Asn Pro Asp Lys Phe Arg Val Val Ala Leu
100 105 110

Ala Ala Gly Ser Asn Val Thr Leu Leu Ala Asp Gln Val Arg Arg Phe
115 120 125

Lys Pro Ala Leu Val Ala Val Arg Asn Glu Ser Leu Ile Asn Glu Leu
130 135 140

Lys Glu Ala Leu Ala Asp Leu Asp Tyr Lys Xaa Glu Ile Ile Pro Gly
145 150 155 160

Glu Xaa Gly Val Ile Glu Val Ala Arg His Pro Glu Ala Val Thr Val
165 170 175

Val Thr Gly Ile Val Gly Cys Ala Gly Leu Xaa Pro Thr Val Ala Ala
180 185 190

Ile Glu Ala Gly Lys Asp Ile Ala Leu Ala Asn Lys Glu Thr Leu Ile
195 200 205

Ala Gly Gly Pro Phe Val Leu Pro Leu Ala Asn Lys His Asn Val Lys
210 215 220

Ile Leu Pro Ala Asp Ser Glu His Ser Ala Ile Phe Gln Cys Ile Gln
225 230 235 240

Gly Leu Pro Glu Gly Ala Leu Arg Lys Ile Ile Leu Thr Ala Ser Gly
245 250 255

Gly Ala Phe Arg Asp Trp Pro Val Glu Lys Leu Lys Glu Val Lys Val
260 265 270

Ala Asp Ala Leu Lys His Pro Asn Trp Asn Met Gly Lys Lys Ile Thr
275 280 285

Val Asp Ser Ala Thr Leu Phe Asn Lys Gly Leu Glu Val Ile Glu Ala
290 295 300

His Tyr Leu Phe Gly Ala Glu Tyr Asp Asp Ile Glu Ile Val Ile His
305 310 315 320

Pro Gln Ser Ile Ile His Ser Met Ile Glu Thr Gln Asp Ser Ser Val
325 330 335

Leu Ala Gln Leu Gly Trp Pro Asp Met Arg Leu Pro Ile Leu Tyr Thr
340 345 350

Met Ser Trp Pro Asp Arg Val Pro Cys Ser Glu Val Thr Trp Pro Arg
355 360 365

Leu Asp Leu Cys Lys Leu Gly Ser Leu Thr Phe Lys Lys Pro Asp Asn

370 375 380

Val Lys Tyr Pro Ser Met Asp Leu Ala Tyr Ala Ala Gly Arg Ala Gly
385 390 395 400

Gly Thr Met Thr Gly Val Leu Ser Ala Ala Asn Glu Lys Ala Val Glu
405 410 415

Met Phe Ile Asp Glu Lys Ile Ser Tyr Leu Asp Ile Phe Lys Val Val
420 425 430

Glu Leu Thr Cys Asp Lys His Arg Asn Glu Leu Val Thr Ser Pro Ser
435 440 445

Leu Glu Glu Ile Val His Tyr Asp Leu Trp Ala Arg Glu Tyr Ala Ala
450 455 460

Xaa Val Gln Leu Ser Ser Gly Ala Arg Pro Val His Ala
465 470 475